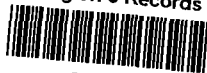


SCREENING SITE INSPECTION REPORT
FOR
THE BECK'S LAKE SITE
SOUTH BEND, INDIANA
U.S. EPA ID: IND980904379
SS ID: NONE
TDD: F05-8611-149
PAN: FIN0476SA

JUNE 7, 1989

EPA Region 5 Records Ctr.



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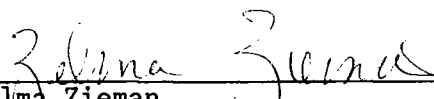
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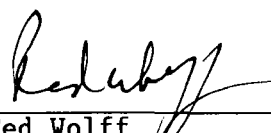
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1. INTRODUCTION

Ecology and Environment, Inc. (E & E), Field Investigation Team (FIT) was tasked by the United States Environmental Protection Agency (U.S. EPA) to conduct a screening site inspection (SSI) of the Beck's Lake site under contract number 68-01-7347.

The site was initially discovered when the Bendix Corporation submitted a U.S. EPA Notification of Hazardous Waste Site (103[c] notification) on March 28, 1984 (Bendix Corporation 1984). The Beck's Lake site is one of 17 sites located in the South Bend, Indiana area identified by the Bendix Corporation as a potential hazardous waste site (Allied Corporation 1986). The site was evaluated in the form of a preliminary assessment (PA) that was submitted to U.S. EPA. The PA was prepared by Susanne Buthman of the Indiana State Board of Health (ISBH) on May 31, 1985 (ISBH 1985). PA preparation, as well as additional pre-remedial activities performed by ISBH in the past, is presently conducted by the Indiana Department of Environmental Management (IDEM).

A site inspection (SI) including the installation of monitoring wells was to be performed at the Beck's Lake site, but changes in the U.S. EPA Pre-Remedial Program strategy shifted the objective of the inspection to an SSI. The SSI was conducted to determine whether TCL compounds or TAL analytes are present at the site, and to characterize more fully the site if a listing site inspection (LSI) is eventually conducted at the site. The SSI of the Beck's Lake site was conducted on April 20, 1988, under TDD F05-8611-149, issued on November 1, 1986.

The FIT SSI included an interview with site representatives, a reconnaissance inspection of the site, and the collection of five soil samples.

The purposes of an SSI have been stated by U.S. EPA in a directive outlining Pre-Remedial Program strategies. The directive states:

All sites will receive a screening SI to 1) collect additional data beyond the PA to enable a more refined preliminary HRS [Hazard Ranking System] score, 2) establish priorities among sites most likely to qualify for the NPL [National Priorities List], and 3) identify the most critical data requirements for the listing SI step. A screening SI will not have rigorous data quality objectives (DQOs). Based on the refined preliminary HRS score and other technical judgement factors, the site will then either be designated as NFRAP [no further remedial action planned], or carried forward as an NPL listing candidate. A listing SI will not automatically be done on these sites, however. First, they will go through a management evaluation to determine whether they can be addressed by another authority such as RCRA [Resource Conservation and Recovery Act].... Sites that are designated NFRAP or deferred to other statutes are not candidates for a listing SI.

The listing SI will address all the data requirements of the revised HRS using field screening and NPL level DQOs. It may also provide needed data in a format to support remedial investigation work plan development. Only sites that appear to score high enough for listing and that have not been deferred to another authority will receive a listing SI. (U.S. EPA 1988)

U.S. EPA Region V has also instructed FIT to identify sites during the SSI that may require removal action to remediate an immediate human health or environmental threat.

2. SITE BACKGROUND

2.1 INTRODUCTION

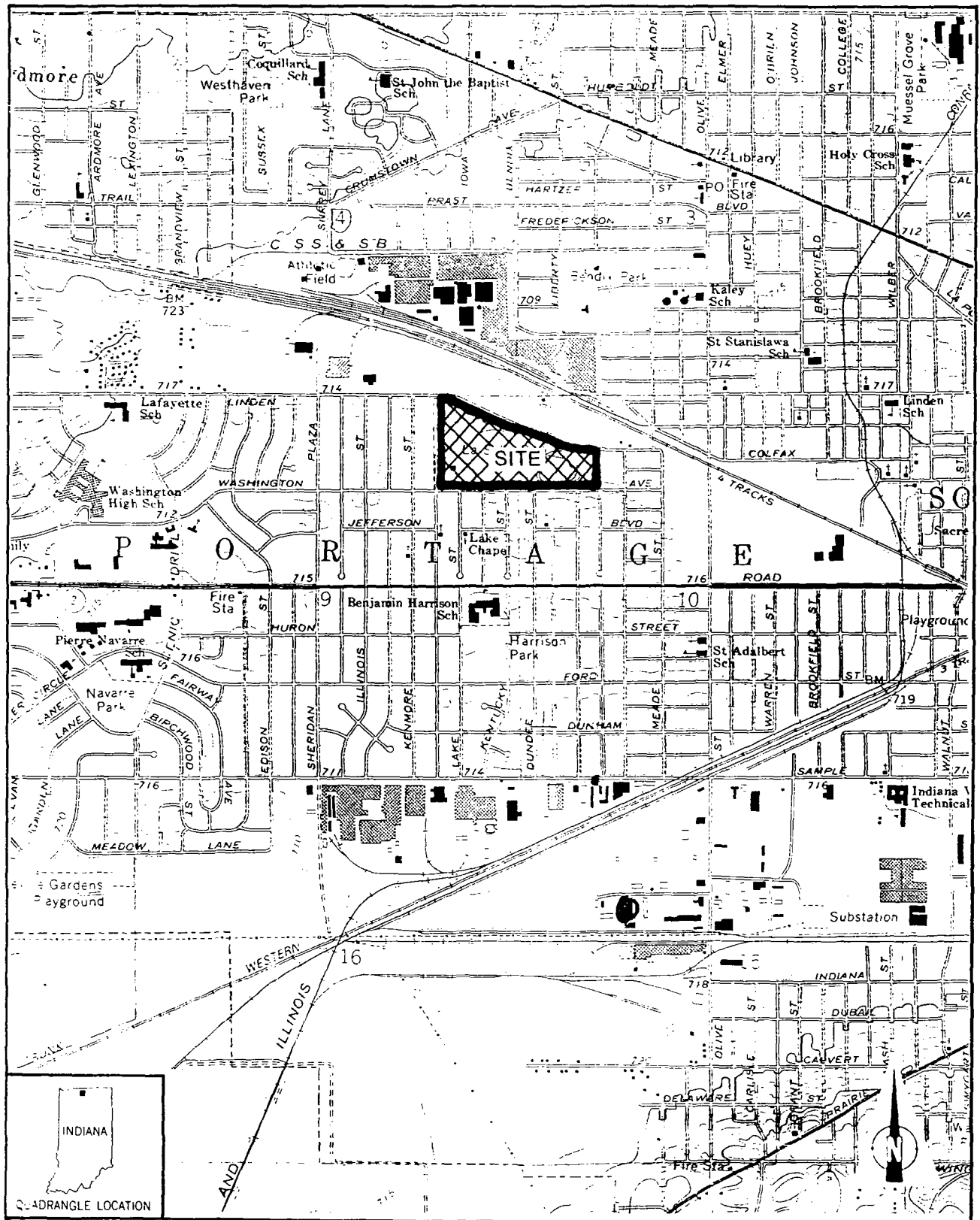
This section includes information obtained from federal, state, and local file information reviewed by FIT and the site representative interview.

2.2 SITE DESCRIPTION

The Beck's Lake site is an inactive open-style dump that accepted industrial waste in the 1950s. Approximately 15 acres was used for waste disposal. In the 1960s, the Beck's Lake site became part of a city park named La Salle Park (Bendix Corporation 1984; ISBH 1985; St. Joseph County Health Department 1984). La Salle Park is approximately 40 acres in size and is bordered by Falcon Street to the west, Linden Avenue to the south, Kaley Street to the east, and Washington Avenue to the north. The site is located in a residential area on the western boundary of South Bend, Indiana, in St. Joseph County (T.37N., R.2E., sections 9 and 10) (United States Geological Survey [USGS] 1969) (see Figure 2-1). A lake approximately 8 acres in area named Beck's Lake and a man-made hill built during the construction of La Salle Park are located on the eastern half of the park (USGS 1969). A 4-mile radius map of the Beck's Lake site is provided in Appendix A.

2.3 SITE HISTORY

The Beck's Lake site is currently owned by the city of South Bend. In the 1960s, the city of South Bend acquired the property and built La Salle Park (ISBH 1985; South Bend City Park Department 1988). Karl



SOURCE: Ecology and Environment, Inc., 1989; BASE MAP: USGS, South Bend West, IN Quadrangle, 7.5 Minute Series, 1969, Photorevised 1980.

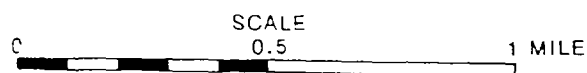


FIGURE 2-1 SITE LOCATION

Stevens, superintendent of the South Bend City Park Department, indicated that prior to the construction of La Salle Park, part of the property may have been used for housing or housing development (South Bend City Park Department 1988). The St. Joseph County Assessor Office has no records of previous owners (St. Joseph County Assessor Office 1988).

The Beck's Lake site is believed to have operated as an open dump with unrestricted access during the 1950s (ISBH 1985; St. Joseph County Health Department 1988). The St. Joseph County Health Department does not have any license or permit records of disposal activities at the Beck's Lake site (St. Joseph County Health Department 1988).

During the 1930s and 1940s, the area surrounding Beck's Lake was a wetland. Development in the area has reduced the wetland area to the present day size of Beck's Lake (St. Joseph County Health Department 1988). A United States Department of Agriculture (USDA) soil survey indicates man-made land and drained Houghton muck is present to the immediate west and north of Beck's Lake, respectively (USDA 1977).

The 103(c) notification information provided to the U.S. EPA in 1984 was gathered during a Bendix internal investigation and is based on the recollections of former employees and haulers (Bendix Corporation 1984). The 103(c) notification states that approximately 15 acres surrounding, and including, Beck's Lake were used for disposal. According to the 103(c) notification, types of waste that may have been disposed include organic substances, inorganic substances, solvents, heavy metals, acids, bases, and asbestos.

Additional correspondence from the Bendix Corporation to E & E indicates that paint wastes, hydroxide sludge, soluble oil and water mixtures, chromic acid, wastewater treatment sludge, nickel waste, stoddard solvents or naptha, foundry sand, and cyanide waste may have been disposed of at the 17 Bendix sites (Allied Corporation 1986; 1986a).

No engineered liners or leachate collection systems are known to have been installed at the site (St. Joseph County Health Department 1988). According to federal, state, and local file information reviewed by FIT, no regulatory-related response activities have occurred at the Beck's Lake site.

3. SCREENING SITE INSPECTION PROCEDURES AND FIELD OBSERVATIONS

3.1 INTRODUCTION

This section outlines procedures and observations of the SSI of the Beck's Lake site. Individual subsections address the site representative interview, reconnaissance inspection, and sampling procedures. Rationales for specific FIT activities are also provided.

The U.S. EPA Potential Hazardous Waste Site Inspection Report (Form 2070-13) for the Beck's Lake site is provided in Appendix B. The U.S. EPA Immediate Removal Action Checksheet for the site is provided in Appendix C.

3.2 SITE REPRESENTATIVE INTERVIEW

A meeting between representatives from the Bendix Corporation and representatives from FIT was conducted at 11:00 a.m. on March 14, 1986. Representing Bendix were Michael Stepanek, Counsel--Aerospace Sector; Karl Miller, Counsel--Automotive Sector; and Gerald Budzin, Manager--Environmental Control. Representing FIT were Bridget Haugh and Richard Dagnall (E & E 1986).

Supplemental information was sent to E & E from Bendix regarding the 17 disposal areas identified in the 103(c) notification on April 7, 1986, and on April 28, 1986 (Allied Corporation 1986; 1986a).

Zelma Zieman of FIT conducted telephone interviews regarding the Beck's Lake site with Paul Trost, of the St. Joseph County Health Department, on December 15, 1988, and with Karl Stevens, superintendent of the South Bend City Parks Department, on December 15, 1988.

3.3 RECONNAISSANCE INSPECTION

FIT conducted a reconnaissance inspection of the Beck's Lake site and surrounding area in accordance with E & E health and safety guidelines. The reconnaissance inspection began at 6:45 a.m. on April 20, 1988. FIT representatives present were: Steve Anderson, Gordon Ferguson, Tim Mayers, Joe Corns, and Zelma Ziemann. Stevens accompanied FIT during the reconnaissance inspection and sampling activities. The reconnaissance inspection included a walk-through of the site to determine appropriate health and safety requirements for conducting on-site activities, to select sampling locations, and to make observations to aid in characterizing the site.

Reconnaissance Inspection Observations. The Beck's Lake site is located on the western boundary of South Bend. Land use immediately west, south, and east of the site is residential (see Figure 3-1). Benjamin Harrison High School is located 1/2 mile south of the site. Located 1/8 mile north of the site are Conrail railroad tracks; an industrial complex is located 1/4 mile north; and residential areas are located 1/2 mile north. Land use approximately 2 miles north, west, and south of the site is agricultural. The St. Joseph River flows north through South Bend approximately 2 miles east of the site. The surface topography of the surrounding 3-mile radius of the site consists of flat terrain with an average elevation of approximately 720 feet above mean sea level (USGS 1969).

La Salle Park was vegetated with trees and grasses and appeared to be well maintained by the Park Department. No stained soil or leachate seeps were observed, nor did FIT observe any engineered liners or leachate collection systems at the site. Because the site is a city park, no fence or barriers were present to prevent site access.

The western half of La Salle Park contains a park district building, picnic areas, jungle gyms, tennis courts, a baseball diamond, and basketball courts. The large man-made hill and Beck's Lake were observed on the eastern half of La Salle Park. The hill slopes at an approximate 25% gradient from a height of approximately 25 feet above the terrain of the park. The hill was formed as the result of disposal of concrete debris found on-site during the park construction and is used for sledding (South Bend City Park Department 1988).

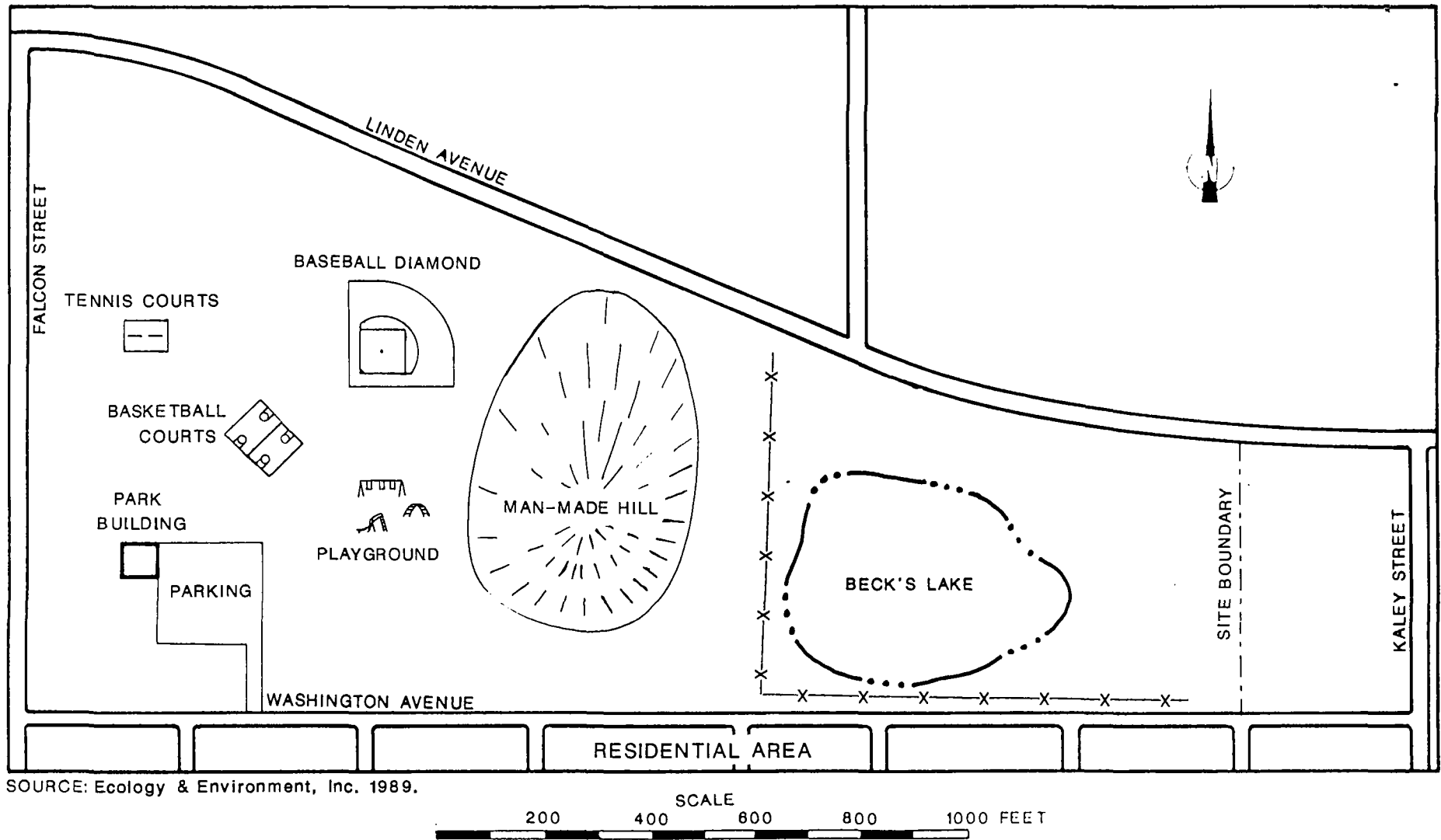


FIGURE 3-1 SITE FEATURES

Beck's Lake is fenced on its western and southern borders and signs stating "NO SWIMMING OR ICE SKATING" are posted around the lake. Beck's Lake has been fished from in the past, but Stevens indicated that severe winters and heavy summer vegetation growth throughout the past several years has eliminated most of the fish population, and fishing activity has decreased (South Bend City Park Department 1988). Photographs of the Beck's Lake site are provided in Appendix D.

3.4 SAMPLING PROCEDURES

Samples were collected by FIT at locations chosen during the reconnaissance inspection to determine levels of U.S. EPA Target Compound List (TCL) compounds and Target Analyte List (TAL) analytes present at the site. The TCL and TAL are provided in Appendix E.

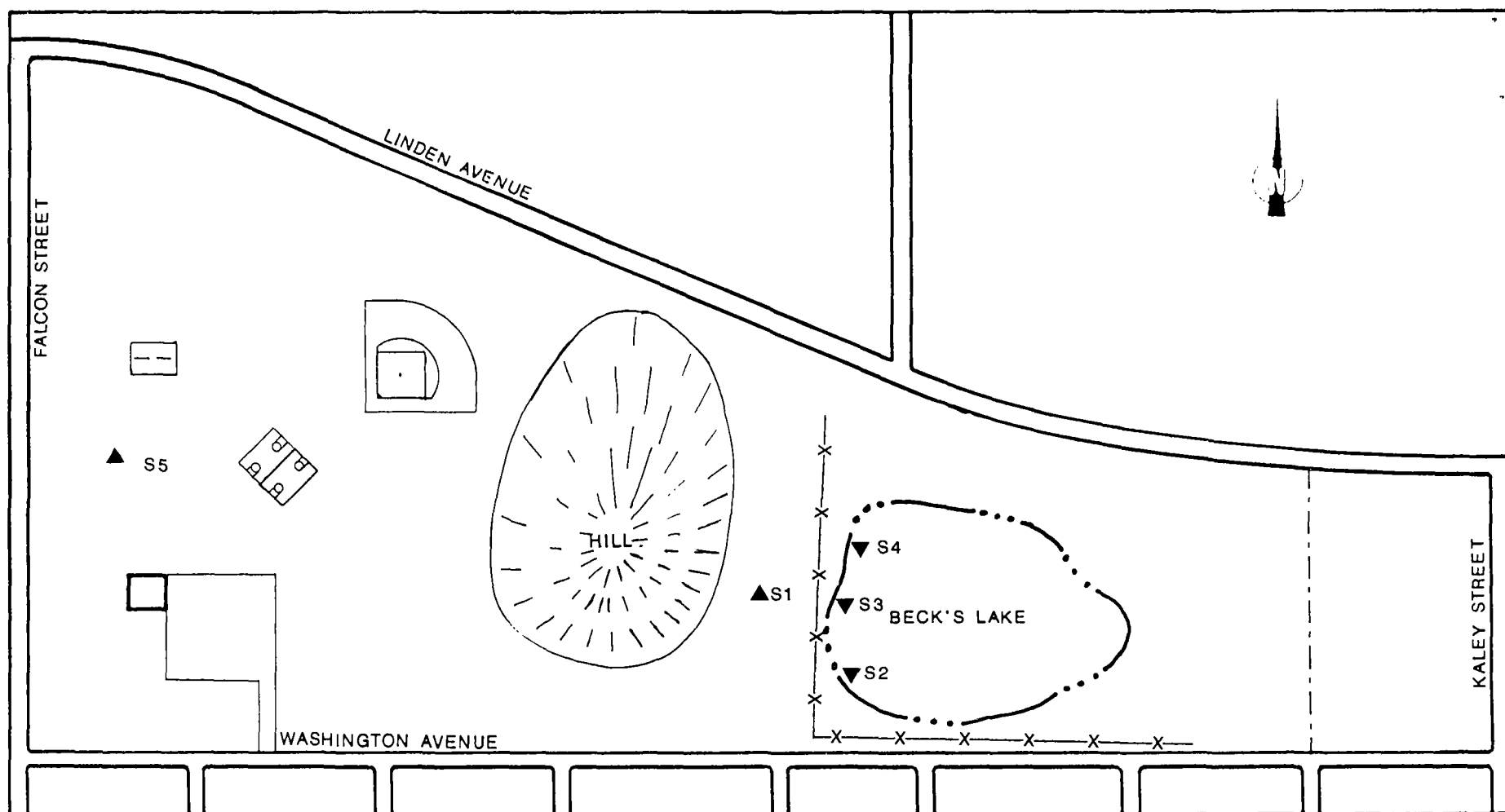
On April 20, 1988, FIT collected two soil samples, two sediment samples, and one potential background soil sample.

Soil and Sediment Sampling Procedures. Subsurface soil sample S1 was of a black, clayey, silty sand collected at a 1 1/2-foot depth from the eastern base of the man-made hill (see Figure 3-2). Subsurface soil sample S1 was collected to determine whether TCL compounds or TAL analytes had migrated vertically downward from the hill.

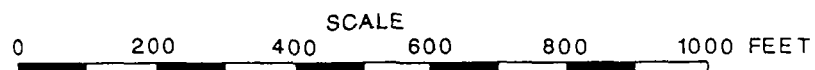
Sediment sample S2 was of a wet, black, silty sand collected from an 8-inch depth at the southwestern edge of Beck's Lake. Sediment samples S3 and S4 were of a black, silty, loam soil type, collected approximately 10 feet from the western edge of Beck's Lake. Sediment samples from Beck's Lake were collected because the 103(c) notification indicated that potentially hazardous waste had been disposed of in and around the lake (Bendix Corporation 1984). In addition, surface water runoff may have carried TCL compounds and TAL analytes to Beck's Lake.

Surface soil sample S5 was of a black, silty loam collected from the western half of La Salle Park between the tennis courts and the park building. Sample S5 was collected outside of the disposal area described in the 103(c) notification (Bendix Corporation 1984). Sample S5 was collected as a potential background sample to determine concentrations of indigenous soil constituents.

All five soil and sediment samples were grab samples. The sampling depth for sample S1 was achieved using a power auger. A posthole digger



SOURCE: Ecology & Environment, Inc. 1989.



LEGEND

- ▲ SOIL SAMPLE
- ▼ SEDIMENT SAMPLE

FIGURE 3-2 SOIL AND SEDIMENT SAMPLING LOCATIONS

was then used to collect sample material from the hole. Samples S2, S3, and S4 were collected with a posthole digger. A row boat was used to collect samples S3 and S4 from offshore Beck's Lake. Sample S5 was collected with a hand trowel.

Sample material collected using the posthole digger (S1, S2, S3, and S4) and the hand trowel (S5) was placed in a stainless steel bowl. A spoon or hand trowel was then used to transfer sample material to sample bottles.

Standard E & E decontamination procedures were followed during the collection of all soil samples. Decontamination procedures included the scrubbing of all equipment (i.e., auger blades, posthole digger, trowels, bowls, and spoons) with a detergent (Alconox) and distilled water solution and triple-rinsing the equipment with distilled water before the collection of each sample (E & E 1987).

All soil samples were packaged and shipped in accordance with U.S. EPA-required procedures. All soil samples were analyzed for TCL compounds by Cenref Labs, Brighton, Colorado, and for TAL analytes by Post Buckley Schuh & Jernigan of Orlando, Florida.

4. ANALYTICAL RESULTS

4.1 INTRODUCTION

This section presents results of the chemical analysis of FIT-collected soil samples for TCL compounds and TAL analytes.

4.2 RESULTS OF CHEMICAL ANALYSIS OF FIT-COLLECTED SAMPLES

Analysis of FIT-collected soil samples revealed substances from the following groups of TCL compounds and TAL analytes: polyaromatic hydrocarbons (PAHs), aromatics, pesticides, heavy metals, metals, common laboratory artifacts, and common soil constituents (see Table 4-1 for complete chemical analysis results of FIT-collected soil samples).

Laboratory analytical data and U.S. EPA Contract Laboratory Program quantitation/detection limits of soil sample analysis are provided in Appendix E.

After an evaluation of the CLP analytical data, FIT determined that sample S5, the potential background sample, contained concentrations of TCL compounds and TAL analytes in excess of what would be expected to be indigenous to the site area. Therefore, sample S2 was determined to be a more representative background sample and has been chosen as the background sample for comparison purposes in this report.

The presence of TCL compounds and TAL analytes detected in sample S5 may be due to contaminant migration, an error in the disposal boundary description, or the spread of the contaminated zone during the La Salle Park construction. In addition, the ability of a loam-textured

soil, such as the material of sample S5, to retain TCL compounds and TAL analytes is greater than that of a sand-textured soil, such as the material of sample S2.

Table 4-1
RESULTS OF CHEMICAL ANALYSIS OF
FIT-COLLECTED SOIL SAMPLES

Sample Collection Information and Parameters	<u>Sample Number</u>				
	S1	S2	S3	S4	S5
Date	4/20/88	4/20/88	4/20/88	4/20/88	4/20/88
Time	0820	0900	0950	1000	1022
Organic Traffic Report Number	EW942	EW943	EW944	EW945	EW946
Inorganic Traffic Report Number	MEX162	MEX163	MEX164	MEX165	MEX166
<u>Compound Detected</u> (values in $\mu\text{g/kg}$)					
<u>Volatile Organics</u>					
acetone	--	310B	630JB	500JB	--
2-butanone (MEK)	38	23	180JB	210JB	10J
toluene	8	--	--	--	29
<u>Semivolatile Organics</u>					
naphthalene	100J	--	260J	610J	--
2-methylnaphthalene	64J	--	390J	--	--
acenaphthene	98J	--	600J	1,700J	--
dibenzofuran	61J	--	290J	760J	--
fluorene	99J	--	590J	1,700J	--
phenanthrene	1,200	150J	5,400	18,000	1,100
anthracene	310J	--	1,400	4,700	240J
di-n-butylphthalate	200J	--	--	--	--
fluoranthene	2,100	220J	10,000	26,000	1,600
pyrene	1,600	220J	7,200	21,000	1,300
benzo[a]anthracene	880	120J	3,100	9,500	710
chrysene	1,100	220J	4,900	14,000	930
benzo[b]fluoranthene	540	--	3,100	7,000	500
benzo[k]fluoranthene	900	--	3,600	11,000	720
benzo[a]pyrene	800	--	3,100	8,200	760
indeno[1,2,3-cd]pyrene	440	--	2,100	5,700	530
benzo[g,h,i]perylene	360J	--	1,900	4,600	600

Table 4-1 (Cont.)

Sample Collection Information and Parameters	<u>Sample Number</u>				
	S1	S2	S3	S4	S5
<u>Pesticides/PCBs</u>					
4,4'-DDE	--	--	--	--	44
4,4'-DDD	--	--	--	230J	--
4,4'-DDT	--	--	--	--	78
<u>Analyte Detected</u> (values in mg/kg)					
aluminum	3,560	1,010	8,780	7,010	4,410
arsenic	8.5	3.7	17	20	9
barium	185	[18]	225	213	96
cadmium	4.4	[1]	6	6.6	2.2
calcium	29,600	27,100	126,000	59,500	11,000
chromium	12*	4*	22*	34*	14*
cobalt	[6.1]	--	--	[6.7]	[4.3]
copper	79	19	55	80	37
iron	19,300	4,920	36,300	29,700	10,400
lead	267*	36*	321*	634*	82*
magnesium	4,460	13,700	9,580	9,120	1,300
manganese	466	120	957	714	360
mercury	0.12	--	0.40	0.90	0.12
nickel	12	--	[18]	[22]	12
potassium	[340]	[162]	[567]	[719]	[449]
selenium	2.7s+	--	3.9s+	--	1.9
vanadium	13	--	[26]	[26]	13
zinc	324*	79*	290*	523*	101*

-- Not detected.

Table 4-1 (Cont.)

COMPOUND QUALIFIERS	DEFINITION	INTERPRETATION
J	Indicates an estimated value.	Compound value may be semiquantitative.
B	This flag is used when the compound is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.	Compound value may be semiquantitative if it is <5x the blank concentration (<10x the blank concentrations for common laboratory artifacts: phthalates, methylene chloride, acetone, toluene, 2-butanone).
ANALYTE QUALIFIERS	DEFINITION	INTERPRETATION
S	Analysis by Method of Standard Additions.	Value may be quantitative.
*	Duplicate value outside QC protocols which indicates a possible matrix problem.	Value may be semiquantitative.
+	Correlation coefficient for standard additions is less than 0.995. See review and laboratory narrative.	Data value may be biased.
[]	Value is real, but is above instrument DL and below CRDL.	Value may be quantitative or semiquantitative.

Source: Ecology and Environment, Inc. 1989.

5. DISCUSSION OF MIGRATION PATHWAYS

5.1 INTRODUCTION

This section discusses data and information that apply to potential migration pathways and targets of TCL compounds and TAL analytes that are possibly attributable to the Beck's Lake site.

The five migration pathways of concern discussed are: groundwater, surface water, air, fire and explosion, and direct contact.

5.2 GROUNDWATER

The oldest known consolidated materials underlying St. Joseph County are dolomite, dolomitic limestone, and shale of the Ordovician and Silurian ages. These Ordovician and Silurian units underlie dolomite, dolomitic limestone, and blue-black bituminous shale of the Devonian and Mississippian ages. The bedrock is not used as a source of water because of its depth and high mineral content (Indiana Department of Conservation 1962).

The bedrock is overlain by unconsolidated material of the Quaternary age, which is the principal source of groundwater in St. Joseph County. The unconsolidated material forms a single but complex hydrological system named the St. Joseph Aquifer system and is designated as a sole source aquifer in the South Bend area by the U.S. EPA (53 FR 23682, June 23, 1988). This aquifer system forms the aquifer of concern (AOC) in the area of the site. The aquifer system has been described by dividing the system into lower, middle, and upper units (Indiana Department of Natural Resources [IDNR] 1969).

The lower unit consists of clay till containing discontinuous zones of sand and gravel that are small in areal extent and are never exposed at the ground surface. The lower unit is a source of water for industrial, municipal, and occasionally domestic and farming uses. The sand and gravel within the lower unit form the principal aquifer in the South Bend/Mishawaka area (41% of county groundwater use), even though larger groundwater yields are possible in the middle unit. The thickness of the lower unit ranges from 0 to 300 feet, but averages 80 feet. The depth to the lower unit in the vicinity of the site is approximately 90 feet. However, the middle unit is hydraulically connected to the lower unit near the site and the depth to water was recorded in 1956 to be 10 to 20 feet (IDNR 1969).

The middle unit consists of sand and gravel that locally contains thick zones of clay and is the principal aquifer for St. Joseph County. The thickness of the middle unit ranges from 10 to 250 feet, but averages 120 feet and crops out in the South Bend area. Recharge of the middle unit is chiefly derived from precipitation. Some infiltration of groundwater to the middle unit is induced from the St. Joseph River during periods of heavy pumping of wells screened in the middle unit (IDNR 1969).

The upper unit consists of silty, sandy, somewhat clayey till, containing lenses of sand and gravel of limited areal extent. The upper unit forms dissected ground and terminal moraines and creates artesian conditions in the middle unit. The thickness of the upper unit ranges from 0 to 140 feet and averages 50 feet. Although the upper unit is not present in the South Bend area, it is present within a 4-mile radius of the site (IDNR 1969).

Overlying the unconsolidated material are thin layers of alluvium, eolian sand, and organically rich sand, silt, and clay of the Holocene age (Indiana Department of Conservation 1962).

A piezometric study of St. Joseph County indicated that the direction of groundwater flow in the site vicinity is toward the northeast (IDNR 1969).

A review of well logs within a 4-mile radius of the site indicates a layer of topsoil ranging from 2 to 20 feet in thickness, a depth to groundwater ranging from 4 to 20 feet, and a depth to bedrock ranging

from 130 to 210 feet. Well logs of the area of the site are provided in Appendix F.

In accordance with the U.S. EPA-approved work plan, no monitoring well samples or residential well samples were collected.

A potential does exist for TCL compounds and TAL analytes to migrate from the site to groundwater. This potential is based on the following information.

- TCL compounds and TAL analytes have been detected in on-site soil samples above background levels, including:
26,000 µg/kg of fluoranthene, 21,000 µg/kg of pyrene,
14,000 µg/kg of chrysene, 34 mg/kg of chromium, 634 mg/kg of lead, and 957 mg/kg of manganese.
- The site does not have a liner or leachate collection system (St. Joseph County Health Department 1988).
- The unsaturated zone in the vicinity of the site is primarily composed of sand and gravel deposits. The AOC is 4 to 20 feet below the ground surface (IDNR 1969).

The South Bend Water Works provides municipal water for 127,000 South Bend-area residents from 35 wells, 25 of which are located within a 4-mile radius of the site. The water from the wells is blended before distribution. The municipal wells are finished at depths ranging from 90 to 240 feet (ISBH 1984; South Bend Water Works 1987).

The University of Notre Dame operates a private water system that serves 6,500 persons. The wells of the system are located on the university campus, approximately 3 to 4 miles northwest of the site. The wells are finished at depths ranging from 108 to 200 feet (ISBH 1984; University of Notre Dame 1987).

St. Joseph County 1980 Census information indicates that 2.68 persons-per-household reside in the area of the site. A house count within a 3-mile radius of the site indicates approximately 400 houses outside of the municipal water system, or 1,072 persons who obtain water from private wells (USGS 1969; U.S. Bureau of the Census 1982).

The total potential target population of groundwater contamination within a 3-mile radius of the site is 128,072 persons, which includes private well users and individuals receiving municipal service.

5.3 SURFACE WATER

Two surface water bodies are located within a 3-mile radius of the site: Beck's Lake and the St. Joseph River. Beck's Lake is affected by TCL compounds and TAL analytes detected at the site, but the St. Joseph River does not appear to be affected.

Beck's Lake is located on-site. Sediment samples collected near the western edge of the lake revealed the presence of TCL compounds and TAL analytes (see Table 4-1). The lake is not used as a drinking water source, or for swimming or boating. The lake is fished from, but this activity has decreased during the past several years because of heavy vegetation growth and a reduced fish population (South Bend City Park Department 1988).

The St. Joseph River is located approximately 2 miles northeast of the site (USGS 1969). The site does not lie within the floodplain (U.S. Department of Housing and Urban Development 1978) of the river and no surface water migration pathways are present from the site to the St. Joseph River (USGS 1969).

5.4 AIR

A release of potential contaminants to the air was not documented during the SSI of the Beck's Lake site. During the reconnaissance inspection, FIT site-entry instruments (OVA 128, radiation monitor, and colorimetric monitoring tubes for cyanide) did not detect levels above background concentrations at the site. In accordance with the U.S. EPA-approved work plan, further air monitoring was not conducted by FIT.

A potential does exist for eolian forces to carry particulates from the site. Potential targets of air contamination include all persons residing within a 4-mile radius of the site. St. Joseph County 1980 Census information indicates 2.68 persons-per-household reside in the site area. A house count within a 4-mile radius of the site indicates approximately 1,250 houses outside of the South Bend City limits, or 3,350 persons (USGS 1969, U.S. Bureau of the Census 1982). Planimeter

calculations indicate approximately 88.37% of South Bend residents, or 96,967 persons, live within a 4-mile radius of the site. The total target population potentially affected by a release of TCL compounds or TAL analytes is 100,317 persons.

5.5 FIRE AND EXPLOSION

According to site representatives and local, state, and federal file information reviewed by FIT, no documentation exists of an incident of fire or explosion at the Beck's Lake site. FIT observations indicated that no apparent potential for fire or explosion existed at the site at the time of the SSI.

5.6 DIRECT CONTACT

According to federal, state, and local file information reviewed by FIT, no documentation exists of an incident of direct contact with TCL compounds or TAL analytes at the Beck's Lake site.

A potential does exist for the public to come into direct contact with TCL compounds and TAL analytes detected at the site. The potential for direct contact is based on the following information.

- TCL compounds and TAL analytes were detected in on-site surface soil samples.
- The site is a city park; access to the site is not restricted.

Based on planimeter calculations of South Bend, approximately 14.30% of South Bend residents (15,689 persons) live within a 1-mile radius of the site and are potential targets of direct contact with TCL compounds and TAL analytes detected at the site.

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1:24,000, photorevised, 1986.

2091:1

APPENDIX A

SITE 4-MILE RADIUS MAP

APPENDIX B

U.S. EPA FORM 2070-13

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)					
01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/ DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
UCC	Nitrochlorobenzene	207-26-7	in tank on main island	11000	mg/kg
UCC	benzobiphenyl	90-32-8	solvent samples collected	8200	
UCC	indene 1,2,3-ethylpyrene	147-31-5	in tank on	412/100	5700
UCC	benzobiphenyl, 7-pyrene	141-31-2			4600
PSD	4,4'-DDE	72-55-1			44
PSD	4,4'-DDD	72-54-8			230
PSD	4,4'-DDT	50-25-13			72
MES	arsenic	* 7440-38-2		20	mg/kg
MES	cadmium	* 7440-43-1		6.4	
MES	chromium	* 7440-47-3		34	*
MES	cobalt	7440-48-4		6.7	B
MES	copper	* 7440-50-8		20	
MES	lead	* 7439-92-1		6.34	*
MES	manganese	* 7439-96-5		197	
MES	mercury	7439-97-6		0.76	
MES	nickel	7440-02-0		22	D
MES	selenium	7782-49-2		3.9	S F
MES	vanadium	7440-62-2		26	B
ME	zinc	* 7440-65-6	/	523	*
* Denotes contaminant was detected in background sample					
23.					
All values listed represent the highest concentration of each contaminant.					
Concentration symbols (J, B, S, +, *) indicate QA/QC comments from CRDC laboratories. See Table 4-1 of SSI Report for thorough explanation.					



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE IN 02 SITE NUMBER 0980904379

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 <input checked="" type="checkbox"/> A. GROUNDWATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: <u>128,072</u>	02 <input type="checkbox"/> OBSERVED (DATE: _____) <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED 04 NARRATIVE DESCRIPTION <p>Municipal drinking water for South Bend and private wells in area obtain water from the St. Joseph Aquifer system which is designated as a safe source aquifer. The aquifer system consists of unconsolidated sand and gravel. Well logs indicate an aquifer thickness ranging from 210 feet to a depth to groundwater from 4 to 20 feet. TCL compounds and TAC analytes detected in on-site soil/sediment samples.</p>
01 <input type="checkbox"/> B. SURFACE WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: <u>0</u>	02 <input checked="" type="checkbox"/> OBSERVED (DATE: <u>4/20/88</u>) <input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED 04 NARRATIVE DESCRIPTION <p>Site does not lie within floodplain or potential drainage area. No surface water migration pathways are present to the St. Joseph River. Pathways exist via surface water from the river for recreational purposes. TCL compounds and TAC analytes detected in sediment samples from River Lake collected by FET on 4/20/88.</p>
01 <input type="checkbox"/> C. CONTAMINATION OF AIR 03 POPULATION POTENTIALLY AFFECTED: <u>94,164</u>	02 <input type="checkbox"/> OBSERVED (DATE: _____) <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED 04 NARRATIVE DESCRIPTION <p>Potential exists for odors from existing TCL compounds and TAC analytes from site since detected areas of contamination are concentrated.</p>
01 <input type="checkbox"/> D. FIRE/EXPLOSIVE CONDITIONS 03 POPULATION POTENTIALLY AFFECTED: <u>C</u>	02 <input type="checkbox"/> OBSERVED (DATE: _____) <input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED 04 NARRATIVE DESCRIPTION <p>Site history and site conditions indicate no significant potential for fire and/or explosion.</p>
01 <input type="checkbox"/> E. DIRECT CONTACT 03 POPULATION POTENTIALLY AFFECTED: <u>15,687</u>	02 <input type="checkbox"/> OBSERVED (DATE: _____) <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED 04 NARRATIVE DESCRIPTION <p>Potential exists for LaSalle Park users to come in contact with TAC analytes and TCL compounds identified in on-site soil/sediment samples.</p>
01 <input type="checkbox"/> F. CONTAMINATION OF SOIL 03 AREA POTENTIALLY AFFECTED: <u>40</u> (Acres)	02 <input checked="" type="checkbox"/> OBSERVED (DATE: <u>4/20/88</u>) <input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED 04 NARRATIVE DESCRIPTION <p>TCL compounds and TAC analytes including PCBs, metals, heavy metals, and pesticides were detected in soil/sediment samples collected on-site. See also 4-1 and Section 4-1 of the SST Report for complete soil sample analysis.</p>
01 <input type="checkbox"/> G. DRINKING WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED: <u>128,072</u>	02 <input type="checkbox"/> OBSERVED (DATE: _____) <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED 04 NARRATIVE DESCRIPTION <p>Drinking water contamination from site is due to shallow groundwater depth (4 to 20 feet), aquifer consists of highly permeable sand and gravel, no containment system exists on site, and TCL compounds and TAC analytes were detected on site. See A above.</p>
01 <input type="checkbox"/> H. WORKER EXPOSURE/INJURY 03 WORKERS POTENTIALLY AFFECTED: <u>undetermined</u>	02 <input type="checkbox"/> OBSERVED (DATE: _____) <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED 04 NARRATIVE DESCRIPTION <p>City of South Bend employs several workers to maintain the LaSalle Park property. TCL compounds and TAC analytes were detected in surface soil samples at LaSalle Park.</p>
01 <input type="checkbox"/> I. POPULATION EXPOSURE/INJURY 03 POPULATION POTENTIALLY AFFECTED: <u>128,072</u>	02 <input type="checkbox"/> OBSERVED (DATE: _____) <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED 04 NARRATIVE DESCRIPTION <p>The greatest potential for population exposure exists through groundwater contamination. See A, C, E above.</p>

APPENDIX C

U.S. EPA
IMMEDIATE REMOVAL ACTION
CHECKSHEET

Immediate Removal Action Check Sheet

<u>Fire and Explosion Hazard</u>	High	Moderate	Low
Flammable Materials _____			X
Explosives _____			X
Incompatible Chemicals _____			X
<u>Direct Contact with Acutely Toxic Chemicals</u>			
Site Security (1) _____	X		
Leaking Drums or Tanks N/A _____			
Open Lagoons or Pits N/A _____			
Materials on Surface (2) _____		X	
Proximity of Population (1) _____	X		
Evidence of Casual Site Use (1) _____	X		
<u>Contaminated Water Supply</u>			
Exceeds 10 Day Snarl N/A _____			
Gross Taste or Odors N/A _____			
Alternate Water Available (3) _____			X
Potential Contamination (3) _____		X	
Is the site abandoned, <u>active</u> , or inactive? city park is active but disposal activities are inactive			

Comments:

- (1) The BL site is currently a South Park city park named La Salle Park. Access to the site and to detected areas of TEL compound and TAL analyte contamination is not restricted.
- (2) TEL compounds and TAL analytes were detected in on site surface soil samples
- (3) Sole source, shallow, sand and gravel aquifer lies below the BL site.

APPENDIX D

FIT SITE PHOTOGRAPHS

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Beck's Lake Site

PAGE 1 OF 9

U.S. EPA ID: IND980904379 TDD: FOS-8611-149

PAN: FIN0496SA

DATE: 4-20-88

TIME: 0820

DIRECTION OF
PHOTOGRAPH:

E

WEATHER
CONDITIONS:

partly cloudy

60°F

PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID
(if applicable):

S1

DESCRIPTION: Close-up



DATE: 4-20-88

TIME: 0820

DIRECTION OF
PHOTOGRAPH:

E

WEATHER
CONDITIONS:

partly cloudy

60°F

PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID
(if applicable):

S1

DESCRIPTION: Perspective



FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Beck's Lake Site

PAGE 2 OF 9

U.S. EPA ID: IND980904379 TDD: FOS-8611-149

PAN: FIN0476SA

DATE: 4-20-88

TIME: 0900

DIRECTION OF
PHOTOGRAPH:

E

WEATHER
CONDITIONS:

partly cloudy

60°F

PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID
(if applicable):

52



DESCRIPTION: Close-up

DATE: 4-20-88

TIME: 0900

DIRECTION OF
PHOTOGRAPH:

E

WEATHER
CONDITIONS:

Partly cloudy

60°F

PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID
(if applicable):

52



DESCRIPTION: Perspective

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Beck's Lake Site

PAGE 3 OF 9

U.S. EPA ID: IND980904379 TDD: FOS-8611-149

PAN: FIN0476SA

DATE: 4-20-88

TIME: 0950

DIRECTION OF
PHOTOGRAPH:

W

WEATHER
CONDITIONS:

partly cloudy

60°F

PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID
(if applicable):

53

DESCRIPTION: Close-up



DATE: 4-20-88

TIME: 1040

DIRECTION OF
PHOTOGRAPH:

ENE

WEATHER
CONDITIONS:

partly cloudy

60°F

PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID
(if applicable):

53

DESCRIPTION: Perspective



FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Beck's Lake Site

PAGE 4 OF 9

U.S. EPA ID: IND980904379 TDD: FOS-8611-149

PAN: FIN0476SA

DATE: 4-20-88

TIME: 1000

DIRECTION OF
PHOTOGRAPH:

Unknown

WEATHER

CONDITIONS:

Partly cloudy

60°F

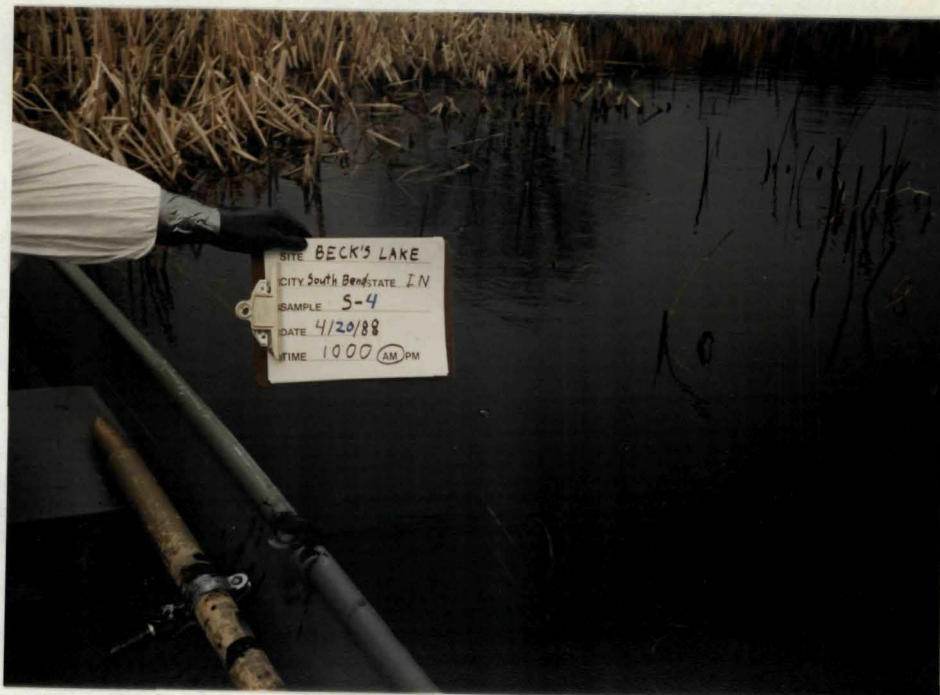
PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID

(if applicable):

S4



DESCRIPTION: close-up

DATE: 4-20-88

TIME: unknown

DIRECTION OF
PHOTOGRAPH:

unknown

WEATHER

CONDITIONS:

Partly cloudy

60°F

PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID

(if applicable):

S4



DESCRIPTION: Perspective

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Beck's Lake Site

PAGE 5 OF 9

U.S. EPA ID: IND980904379 TDD: F05-8611-149

PAN: FIN0476SA

DATE: 4-20-88

TIME: 1022

DIRECTION OF
PHOTOGRAPH:

E

WEATHER
CONDITIONS:

Partly cloudy

60°F

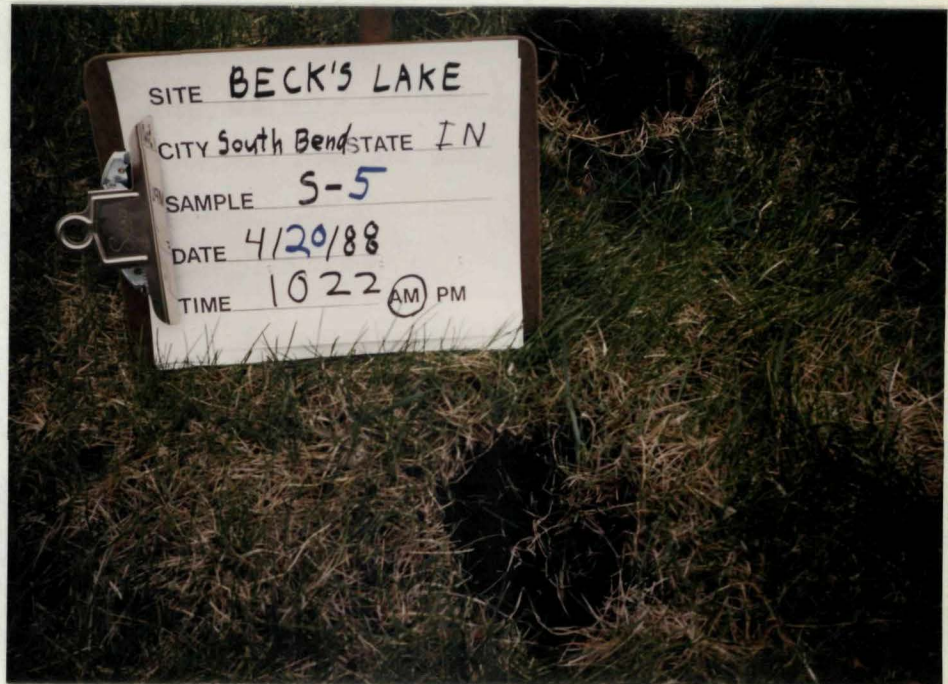
PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID
(if applicable):

SS

DESCRIPTION: Close-up



DATE: 4-20-88

TIME: 1022

DIRECTION OF
PHOTOGRAPH:

E

WEATHER
CONDITIONS:

Partly cloudy

60°F

PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID
(if applicable):

SS

DESCRIPTION: Perspective



FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Beck's Lake Site

PAGE 6 OF 9

U.S. EPA ID: IND0980904379

TDD: F05-8611-149

PAN: FIN0476SA



DATE: 4-20-88 TIME: 1050 DIRECTION OF PHOTOGRAPH: W PHOTOGRAPHED BY: Steve Anderson

WEATHER CONDITIONS: partly cloudy, 60°F SAMPLE ID (if applicable): none

DESCRIPTION: Panoramic view of western half of LaSalle Park photographed from hill top. Park employees visible in photograph.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Beck's Lake Site

PAGE 7 OF 9

U.S. EPA ID: IN0980904379

TDD: F05-8611-149

PAN: FIN0476SA



DATE: 4-20-88 TIME: 1055 DIRECTION OF PHOTOGRAPH: NE, E, ESE PHOTOGRAPHED BY: Steve Anderson

WEATHER CONDITIONS: partly cloudy, 60°F SAMPLE ID (if applicable): none

DESCRIPTION: Panoramic view of Beck's Lake photographed from hill top.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Beck's Lake Site

PAGE 8 OF 9

U.S. EPA ID: IND980904379

TDD: F05-8611-149

PAN: FIN0476SA



DATE: 4-20-88 TIME: 1120 DIRECTION OF PHOTOGRAPH: W PHOTOGRAPHED BY: Steve Anderson

WEATHER CONDITIONS: partly cloudy, 60°F SAMPLE ID (if applicable): none

DESCRIPTION: Panoramic view of Beck's Lake photographed from Linden Avenue.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Beck's Lake Site

PAGE 9 OF 9

U.S. EPA ID: IND980904379 TDD: F05-8611-149

PAN: FIN0476SA

DATE: 4-20-88

TIME: 1120

DIRECTION OF
PHOTOGRAPH:

W

WEATHER
CONDITIONS:

partly cloudy

60°F

PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID
(if applicable):

none



DESCRIPTION: Beck's Lake and hill photographed from
Linden Avenue.

DATE: 4-20-88

TIME: unknown

DIRECTION OF
PHOTOGRAPH:

E

WEATHER
CONDITIONS:

partly cloudy

60°F

PHOTOGRAPHED BY:

Steve Anderson

SAMPLE ID
(if applicable):

none



DESCRIPTION: Photograph of "No swimming or ice skating"
sign posted on southern edge of Beck's Lake.

APPENDIX E

CHEMICAL ANALYSIS DATA
OF
FIT-COLLECTED SAMPLES

Contract Laboratory Program
Target Compound List
Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
Chloromethane	74-87-3	10 ug/L	10 ug/Kg
Bromomethane	74-83-9	10	10
Vinyl chloride	75-01-4	10	10
Chloroethane	75-00-3	10	10
Methylene chloride	75-09-2	5	5
Acetone	67-64-1	10	5
Carbon disulfide	75-15-0	5	5
1,1-dichloroethene	75-35-4	5	5
1,1-dichloroethane	75-34-3	5	5
1,2-dichloroethene (total)	540-59-0	5	5
Chloroform	67-66-3	5	5
1,2-dichloroethane	107-06-2	5	5
2-butanone (MEK)	78-93-3	10	10
1,1,1-trichloroethane	71-55-6	5	5
Carbon tetrachloride	56-23-5	5	5
Vinyl acetate	108-05-4	10	10
Bromodichloromethane	75-27-4	5	5
1,2-dichloropropane	78-87-5	5	5
cis-1,3-dichloropropene	10061-01-5	5	5
Trichloroethene	79-01-6	5	5
Dibromochloromethane	124-48-1	5	5
1,1,2-trichloroethane	79-00-5	5	5
Benzene	71-43-2	5	5
Trans-1,3-dichloropropene	10061-02-6	5	5
Bromoform	75-25-2	5	5
4-Methyl-2-pentanone	108-10-1	10	10
2-Hexanone	591-78-6	10	10
Tetrachloroethene	127-18-4	5	5
Tolene	108-88-3	5	5
1,1,2,2-tetrachloroethane	79-34-5	5	5
Chlorobenzene	108-90-7	5	5
Ethyl benzene	100-41-4	5	5
Styrene	100-42-5	5	5
Xylenes (total)	1330-20-7	5	5

ROUTINE ANALYTICAL SERVICES
CONTRACT REQUIRED DETECTION AND QUANTITATION LIMITS

Contract Laboratory Program
Target Compound List
Semivolatiles Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
Phenol	108-95-2	10 ug/L	330 ug/Kg
bis(2-Chloroethyl) ether	111-44-4	10	330
2-Chlorophenol	95-57-8	10	330
1,3-Dichlorobenzene	541-73-1	10	330
1,4-Dichlorobenzene	106-46-7	10	330
Benzyl Alcohol	100-51-6	10	330
1,2-Dichlorobenzene	95-50-1	10	330
2-Methylphenol	95-48-7	10	330
bis(2-Chloroisopropyl) ether	108-60-1	10	330
4-Methylphenol	106-44-5	10	330
N-Nitroso-di-n-dipropylamine	621-64-7	10	330
Hexachloroethane	67-72-1	10	330
Nitrobenzene	98-95-3	10	330
Isophorone	78-59-1	10	330
2-Nitrophenol	88-75-5	10	330
2,4-Dimethylphenol	105-67-9	10	330
Benzoic Acid	65-85-0	50	1600
bis(2-Chloroethoxy) methane	111-91-1	10	330
2,4-Dichlorophenol	120-83-2	10	330
1,2,4-Trichlorobenzene	120-82-1	10	330
Naphthalene	91-20-3	10	330
4-Chloroaniline	106-47-8	10	330
Hexachlorobutadiene	87-68-3	10	300
4-Chloro-3-methylphenol	59-50-7	10	330
2-Methylnaphthalene	91-57-6	10	330
Hexachlorocyclopentadiene	77-47-4	10	330
2,4,6-Trichlorophenol	88-06-2	10	330
2,4,5-Trichlorophenol	95-95-4	50	1600
2-Chloronaphthalene	91-58-7	10	330
2-Nitroaniline	88-74-4	50	1600
Dimethylphthalate	131-11-3	10	330
Acenaphthylene	208-96-8	10	330
2,6-Dinitrotoluene	606-20-2	10	330
3-Nitroaniline	99-09-2	50	1600
Acenaphthene	83-32-9	10	330
2,4-Dinitrophenol	51-28-5	50	1600
4-Nitrophenol	100-02-7	50	1600
Dibenzofuran	132-64-9	10	330
2,4-Dinitrotoluene	121-14-2	10	330
Diethylphthalate	84-66-2	10	330
4-Chlorophenyl-phenyl ether	7005-72-3	10	330

Contract Laboratory Program
Target Compound List
Semivolatiles Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SLUDGE SEDIMENT
Fluorene	86-73-7	10 ug/L	330 ug/Kg
4-Nitroaniline	100-01-6	50	1600
4,6-Dinitro-2-methylphenol	534-52-1	50	1600
N-nitrosodiphenylamine	86-30-6	10	330
4-Bromophenyl-phenylether	101-55-3	10	330
Hexachlorobenzene	118-74-1	10	330
Pentachlorophenol	87-86-5	50	1600
Phenanthrene	85-01-8	10	330
Anthracene	120-12-7	10	330
Di-n-butylphthalate	84-74-2	10	330
Fluoranthene	206-44-0	10	330
Pyrene	129-00-0	10	330
Butylbenzylphthalate	85-68-7	10	330
3,3'-Dichlorobenzidine	91-94-1	20	660
Benzo(a)anthracene	56-55-3	10	330
Chrysene	218-01-9	10	330
bis(2-Ethylhexyl)phthalate	117-81-7	10	330
Di-n-octylphthalate	117-84-0	10	330
Benzo(b)fluoranthene	205-99-2	10	330
Benzo(k)fluoranthene	207-08-9	10	330
Benzo(a)pyrene	50-32-8	10	330
Indeno(1,2,3-cd)pyrene	193-39-5	10	330
Dibenz(a,h)anthracene	53-70-3	10	330
Benzo(g,h,i)perylene	191-24-2	10	330

Contract Laboratory Program
Target Compound List
Pesticide and PCB Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
alpha-BHC	319-84-6	0.05 ug/L	8 ug/Kg
beta-BHC	319-85-7	0.05	8
delta-BHC	319-86-8	0.05	8
gamma-BHC (Lindane)	58-89-9	0.05	8
Heptachlor	76-44-8	0.05	8
Aldrin	309-00-2	0.05	8
Heptachlor epoxide	1024-57-3	0.05	8
Endosulfan I	959-98-8	0.05	8
Dieldrin	60-57-1	0.10	16
4,4'-DDE	72-55-9	0.10	16
Endrin	72-20-8	0.10	16
Endosulfan II	33213-65-9	0.10	16
4,4'-DDD	72-54-8	0.10	16
Endosulfan sulfate	1031-07-8	0.10	16
4,4'-DDT	50-29-3	0.10	16
Methoxychlor (Mariate)	72-43-5	0.5	80
Endrin ketone	53494-70-5	0.10	16
alpha-Chlordane	5103-71-9	0.5	80
gamma-chlordane	5103-74-2	0.5	80
Toxaphene	8001-35-2	1.0	160
AROCLOR-1016	12674-11-2	0.5	80
AROCLOR-1221	11104-28-2	0.5	80
AROCLOR-1232	11141-16-5	0.5	80
AROCLOR-1242	53469-21-9	0.5	80
AROCLOR-1248	12672-29-6	0.5	80
AROCLOR-1254	11097-69-1	1.0	160
AROCLOR-1260	11096-82-5	1.0	160

Contract Laboratory Program
Target Analyte List
Inorganic Quantitation Limits

COMPOUND	PROCEDURE	SOIL WATER	SEDIMENT SLUDGE
Aluminum	ICP	200 ug/L	40 mg/Kg
Antimony	Furnace	60	2.4
Arsenic	Furnace	10	2
Barium	ICP	200	40
Beryllium	ICP	5	1
Cadmium	ICP	5	1
Calcium	ICP	5000	1000
Chromium	ICP	10	2
Cobalt	ICP	50	10
Copper	ICP	25	5
Iron	Icp	100	20
Lead	Furnace	5	1
Magnesium	ICP	5000	1000
Manganese	ICP	15	3
Mercury	Cold Vapor	0.2	0.008
Nickel	ICP	40	8
Potassium	ICP	5000	1000
Selenium	Furnace	5	1
Silver	ICP	10	2
Sodium	ICP	5000	1000
Thallium	Furnace	10	2
Vanadium	ICP	50	10
Zinc	ICP	20	4
Cyanide	Color	10	2



ecology and environment, inc.

111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415

International Specialists in the Environment

CRL Receipt Date 5/25/88 FIT Receipt Date 6/13/88 Review Completed 6/16/88

TO: S. ANDERSON

FROM: Mary Gzyra

SUBJECT: BECKS LAKE

PAN: IN0476SA (1 hour charged for review) Case # 9411

Sample Description

Organics (VOA, ABN, Pest/PCB)

Low Soil

 Low Water

 Drinking Water

 Other

Inorganics (Metals, Cyanide)

5 Low Soil

 Low Water

 Drinking Water

 Other

Project Data Status Completed!!

✓ Incomplete, awaiting low soil org.

FIT Data Review Findings:

As, Cd, Cr, Pb detected in all samples.
Hg detected in MEX 162, 164, 165, 166.

Check Data Sheets for Transcription Errors

 Compounds were detected in sample(s); see enclosed sheet.

Book No. 8 Page No. 24-26 Date Sampled 4/20/88

0759:2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

PAGE 1 OF _____

6/13/88

DATE: 6.5.88

RVP

SUBJECT: Review of Region V CLP Data
Received for Review on

5-25-88

FROM: Curtis Ross, Director (5SCRL)
Central Regional Laboratory

TO: Data User: FIT

We have reviewed the data for the following case(s).

SITE NAME: Becks Lake (IN) SMO Case No. 9411

EPA Data Set No. SF 5087 No. of Samples: 5 D.U./Activity Numbers Y905/C721ZZ

CRL No. 88FA18S85 - S89

SMO Traffic No. MEX162-166

CLP Laboratory: PBS & J Hrs. Required for Review: 4.5 + 1

Following are our findings:

The laboratory's portion of this case included 5 low level soil samples analyzed for total metals and total cyanide.

The % RPDs on duplicates for Pb(23%), Cr(24%) and Zn(21%) are acceptable for soils(35%).

All Hg and CN data are acceptable.

Reviewed By: Duane Kruse
Date: 6/2/88

D. Kruse

*The qualifier *
does not affect the
data. M. Dye*

- () Data are acceptable for use.
- (X) Data are acceptable for use with qualifications referenced above.
See Data Qualifier sheets and Calibration Outlier forms for flags and additional comments.
- () Data are preliminary - pending verification by Contractor Laboratory.
See Case Summary above.
- () Data are unacceptable.

1

cc: Carla Dempsey, CLP Quality Assurance Officer, Analytical Operations Branch
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

COMPOUND FOOTNOTES

DEFINITION

INTERPRETATION

U	Indicates compound was analyzed for but not detected.	Compound was not detected.
J	Indicates an estimated value.	Compound value may be semi-quantitative.
UJ	Quantitation limit is estimated due to a Quality Control (QC) protocol.	Compound was not detected.
C	This flag applies to pesticide results where the identification has been confirmed by GC/MS. Single component pesticides ≥ 10 ng/ul in the final extract shall be confirmed by GC/MS.	Compound was confirmed by mass spectroscopy
B	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.	Compound value may be semi-quantitative if it is $< 5 \times$ the blank concentration ($< 10 \times$ the blank concentrations for common lab artifacts: phthalates, methylene chloride, acetone, toluene, 2-butanone).
E	This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will <u>not</u> apply to pesticides/PCBs analyzed by GC/EC methods.	Compound value may be semi-quantitative.
D	This flag identifies all compounds identified in an analysis at a secondary dilution factor.	Alerts data user to a possible change in the CRQL.
A	This flag indicates that a TIC is a suspected aldol-condensation product.	Alerts data user of a lab artifact.
R	Results are unusable due to a major violation of QC protocol.	Compound value is not usable.

ANALYTE FOOTNOTES

DEFINITION

INTERPRETATION

OLD	NEW		
E	E	Estimated or not reported due to interference. See laboratory narrative.	Compound or element was not detected or value may be semi-quantitative.
S	S	Analysis by Method of Standard Additions.	Value may be quantitative.
R	N	Spike recoveries outside QC protocols which indicates a possible matrix problem. Data may be biased high or low. See spike results and laboratory narrative.	Value may be quantitative or semi-quantitative.
A	A	Duplicate value outside QC protocols which indicates a possible matrix problem.	Value may be semi-quantitative.
+	+	Correlation coefficient for standard additions in less than 0.995. See review and laboratory narrative.	Data value may be biased.
[]	B	Value is real, but is above instrument DL and below CRDL.	Value may be quantitative or semi-quantitative.
UJ		DL is estimated because of a QC protocol. DL is possibly above or below CRDL.	Compound or element was not detected.
J		Value is above CRDL and is an estimated value because of a QC Protocol.	Value may be semi-quantitative.
U	U	Compound was analyzed for but not detected.	Compound was not detected.
	H	Duplicate injection precision not met.	Value may be semi-quantitative.
	W	Post digestion spike for furnace AA analysis is out of control limits (35-115%), while sample absorbance is $< 50\%$ of spike absorbance.	Value may be semi-quantitative.
NA		Value not available due to insufficient data.	
NR		Value not recommended to be calculated, since chemical has proven to be a human carcinogen.	
()		Estimated value.	

Source: Ecology and Environment, Inc. 1988.

Table 4- Cont.

BECKS LAKE CASE # 9411

Sample Collection Information and Parameters	Sample Number											
	2_1	2_2	2_3	2_4	2_5	2_6	2_7	2_8	2_9	2_10	2_11	2_12
Pesticides/PCBs Cont.												
Aroclor 1232												
Aroclor 1242												
Aroclor 1248												
Aroclor 1254												
Aroclor 1260												
Analyte Detected (values in ug/ (total))	MEX 162	163	164	165	166							
aluminum	3560	1010	8780	7010	4410							
antimony												
arsenic	8.5	3.7	17	20	9							
barium	185	[18]	225	213	96							
beryllium												
cadmium	4.4	[1]	6	6.6	2.2							
calcium	27600	27100	126000	57500	11500							
chromium	12 *	4 *	22 *	34 *	14 *							
cobalt	[6.1]			[6.7]	[4.3]							
copper	79	19	55	80	37							
iron	19300	4920	36300	29700	10400							
lead	267 *	36 *	321 *	634 *	82 *							
magnesium	4460	13700	9580	9120	1300							
manganese	466	120	957	714	360							
mercury	0.12		0.40	0.90	0.12							
nickel	12		[18]	[22]	12							
potassium	[345]	[162]	[567]	[719]	[449]							
selenium	2.7 S+		3.9 S+		1.9							
silver												
sodium												
thallium												
vanadium	13		[26]	[26]	13							
zinc	324 *	79 *	290 *	523 *	101 *							
cyanide												

-- Not detected.

The qualifier * does not affect
the data for Cr, Pb, Zn.

M. Dyer

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 TSI 8-557-2490

EPA Sample No.

MEX 162

Date 5/19/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME PBS & J
SOW NO. 7/85
LAB SAMPLE ID. NO. 8804124-01

CASE NO. 9411
Lab Receipt Date 4/21/88
QC REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium _____
Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or ~~mg/kg~~ dry weight (Circle One)

1. Aluminum	<u>3560</u>	P	13. Magnesium	<u>4460</u>	P
2. Antimony	<u>8.6u</u>	P	14. Manganese	<u>466</u>	P
3. Arsenic	<u>8.5</u>	F	15. Mercury	<u>0.12</u>	CV
4. Barium	<u>185</u>	P	16. Nickel	<u>12</u>	P
5. Beryllium	<u>0.2u</u>	P	17. Potassium	<u>[340]</u>	A
6. Cadmium	<u>4.4</u>	P	18. Selenium	<u>[2.75+]</u>	F
7. Calcium	<u>29600</u>	P	19. Silver	<u>2.4u</u>	F
8. Chromium	<u>[12*]</u> E-04 ^{or}	P	20. Sodium	<u>347u</u>	P
9. Cobalt	<u>[6.1]</u>	P	21. Thallium	<u>2.4u</u>	F
10. Copper	<u>79</u> E-04 ^{or}	P	22. Vanadium	<u>13</u>	P
11. Iron	<u>19300</u>	P	23. Zinc	<u>[324*]</u>	P
12. Lead	<u>[267*]</u>	P	Percent Solids (%)	<u>51.8</u>	
Cyanide	<u>0.6u</u>				

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Block, medium

*The qualifier *
does not affect
the data for
Cr, Pb, Zn in all 5 samples.*
Lab Manager M. J. J...
LA K...

Date 5/19/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME PBS&J

CASE NO. 9411

SOW NO. 7/85

Lab Receipt Date 4/21/88

LAB SAMPLE ID. NO. 8804124-02

QC REPORT NO. 1

Elements Identified and Measured

Concentration:

Low X

Medium

Matrix: Water

Soil X

Sludge

Other

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	1010	P	13. Magnesium	13700	P
2. Antimony	114	P	14. Manganese	120	P
3. Arsenic	3.7	F	15. Mercury	0.20	CV
4. Barium	1187	P	16. Nickel	5.40	P
5. Beryllium	0.30	P	17. Potassium	11627	A
6. Cadmium	1.07	P	18. Selenium	1.50	F
7. Calcium	27100	P	19. Silver	3.00	F
8. Chromium	4.0 *	E ^{OX} PK P	20. Sodium	4270	P
9. Cobalt	2.50	P	21. Thallium	3.00	F
10. Copper	19	E ^{OX} PK P	22. Vanadium	5.10	P
11. Iron	4920	P	23. Zinc	179 *	P
12. Lead	136 *	P	Percent Solids (1)	66.5	

Cyanide 0.80

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Black, medium

Lab Manager

LA Kunkin

MEX 164

Date 5/19/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME PBS & J

CASE NO. 9411

SOW NO. 7185

Lab Receipt Date 4/21/88

LAB SAMPLE ID. NO. 8804124-03

QC REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium _____
Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	<u>8780</u>	P	13. Magnesium	<u>9580</u>	P
2. Antimony	<u>20u</u>	P	14. Manganese	<u>957</u>	P
3. Arsenic	<u>178</u>	F	15. Mercury	<u>0.40</u>	CV
4. Barium	<u>225</u>	P	16. Nickel	<u>[18]</u>	P
5. Beryllium	<u>0.6u</u>	P	17. Potassium	<u>[567]</u>	A
6. Cadmium	<u>6.0</u>	P	18. Selenium	<u>[3.95+]</u>	F
7. Calcium	<u>126000</u>	P	19. Silver	<u>5.8u</u>	F
8. Chromium	<u>[22*]</u> E-04	P	20. Sodium	<u>8300</u>	P
9. Cobalt	<u>4.9u</u>	P	21. Thallium	<u>5.8u</u>	F
10. Copper	<u>55</u> E-04	P	22. Vanadium	<u>[26]</u>	P
11. Iron	<u>36300</u>	P	23. Zinc	<u>[290*]</u>	P
12. Lead	<u>[321*]</u>	P	Percent Solids (x)	<u>34.2</u>	
Cyanide	<u>1.5u</u>				

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Block, fine

Lab Manager

Ka Kunitz

Date 5/19/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME PBS&J
SOW NO. 7185
LAB SAMPLE ID. NO. 8804124-04

CASE NO. 9411
Lab Receipt Date 4/21/88
QC REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium _____
Matrix: Water _____ Soil X Sludge _____ Other _____

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	<u>7010</u>	P	13. Magnesium	<u>9120</u>	P
2. Antimony	<u>26u</u>	P	14. Manganese	<u>714</u>	P
3. Arsenic	<u>20</u>	F	15. Mercury	<u>0.90</u>	CV
4. Barium	<u>213</u>	P	16. Nickel	<u>122</u>	P
5. Beryllium	<u>0.7u</u>	P	17. Potassium	<u>7197</u>	A
6. Cadmium	<u>6.6</u>	P	18. Selenium	<u>19u</u>	F
7. Calcium	<u>59500</u>	P	19. Silver	<u>7.4u</u>	F
8. Chromium	<u>34*</u> 60*	P	20. Sodium	<u>1050u</u>	P
9. Cobalt	<u>6.7</u>	P	21. Thallium	<u>7.4u</u>	F
10. Copper	<u>80</u> 60*	P	22. Vanadium	<u>26</u>	P
11. Iron	<u>29700</u>	P	23. Zinc	<u>523*</u>	P
12. Lead	<u>634*</u>	P	Percent Solids (I)	<u>27.0</u>	
Cyanide	<u>1.9u</u>				

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Black, fine
Se sample is diluted by a factor of 5.

Lab Manager KA Kunkiewicz

Date 5/19/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME PBS & J

CASE NO. 9411

SOW NO. 7/85

Lab Receipt Date 4/21/88

LAB SAMPLE ID. NO. 8804124-05

QC REPORT NO. 1

Elements Identified and Measured

Concentration: Low X

Medium

Matrix: Water

Soil X

Sludge

Other

ug/L or mg/kg dry weight (Circle One)

1. Aluminum	<u>4410</u>	P	13. Magnesium	<u>1300</u>	P
2. Antimony	<u>8.7u</u>	P	14. Manganese	<u>360</u>	P
3. Arsenic	<u>9.0</u>	F	15. Mercury	<u>0.12</u>	CV
4. Barium	<u>96</u>	P	16. Nickel	<u>12</u>	P
5. Beryllium	<u>0.20</u>	P	17. Potassium	<u>[449]</u>	A
6. Cadmium	<u>2.2</u>	P	18. Selenium	<u>1.95</u>	F
7. Calcium	<u>11000</u>	P	19. Silver	<u>120</u>	F
8. Chromium	<u>[14 *</u>	E OK P	20. Sodium	<u>3520</u>	P
9. Cobalt	<u>[4.37]</u>	P	21. Thallium	<u>2.50</u>	F
10. Copper	<u>37</u>	OK P	22. Vanadium	<u>13</u>	P
11. Iron	<u>10400</u>	P	23. Zinc	<u>[101 *</u>	P
12. Lead	<u>[82 *</u>	P	Percent Solids (%)	<u>80.6</u>	

Cyanide 0.60

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however:

Comments: Black, fine
Ag. sample is diluted by a factor of 5 (1/5/88)

Lab Manager KA Kumbhoo

QC EXCEPTION SUMMARY REPORT

CASE # 5471
 DATA SET # SF 5082
 LAB Q.C.#
 DATE: 6/1/86

SITE Baptist Lake
 LAB PBS & J
 REVIEWED BY D. Kruse

MATRIX: Solid WATER SAMPLE SPK.
 CONC. : low WATER SAMPLE DUP.
 MATRIX: SOIL SAMPLE SPK.
 CONC. : SOIL SAMPLE DUP.

	OVERALL CASE QC									MATRIX SPECIFIC QC						SAMPLE SPECIFIC QC		FIELD QC			REGIONAL QC			OTHER / COMMENTS
	Holding Time	Cal Blanks	Init Calver	Contn Calver	Prep Bk AQ	Prep Bk SOL	ICS %R	ICS %		Sol Dup RPD	Sol Spk %R	AQ Dup RPD	AQ Spk %R	Ser Dils		GFAA Dup	GFAA Spike	Blank	Dup RPD	Spike %R	Blind Blank	Blind Spike %R	Split Sample RPD	
								AQ	SOL					AQ	SOL									
Aluminum																								
Antimony																								
Arsenic																								
Barium																								
beryllium																								
Cadmium																								
Calcium																								
Chromium																								
Cobalt																								
Copper																								
Iron																								
Lead																								
Magnesium																								
Manganese																								
Mercury																								
Nickel																								
Potassium																								
Selenium																								
Silver																								
Sodium																								
Thallium																								
Tin																								
Vanadium																								
Zinc																								
Cyanide																								

NO field Dups or BIKS

5087

Date 5/19/88

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

Lab Name PBS&J
SOW No. 7/85

Case No. 9411
Q.C. Report No. 1

Sample Numbers

EPA No.	Lab ID No.
<u>MEX 162</u>	<u>8804124-01</u>
<u>MEX 163</u>	<u>8804124-02</u>
<u>MEX 164</u>	<u>8804124-03</u>
<u>MEX 165</u>	<u>8804124-04</u>
<u>MEX 166</u>	<u>8804124-05</u>
_____	_____
_____	_____
_____	_____

EPA No.	Lab ID No.
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

RECEIVED
MAY 24 1988

U.S. EPA CENTRAL
REGIONAL LAB

Comments: _____

ICP interelement and background corrections applied? Yes X No ____.

If yes, corrections applied before X or after _____ generation of raw data.

Footnotes:

NR - Not required by contract at this time

Form 1:

Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract-required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with P (for ICP), A (for Flame AA) or F (for Furnace AA).

U - Indicates element was analyzed for but not detected. Report with the instrument detection limit value (e.g., 10U).

I - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.

S - Indicates value determined by Method of Standard Addition.

R - Indicates spike sample recovery is not within control limits.

D - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995

II - Indicates duplicate injection results exceeded control limits.

Indicate method used: P for ICP; A for Flame AA and F for Furnace

Q. C. Report No. 1

BLANKS

LAB NAME: PBS&JCASE NO. 9411DATE 5/19/88UNITS ug/L

Compound	Initial Calibration Blank Value	Continuing Calibration				Preparation Blank	
		Blank Value				Matrix:	Matrix:
		1	2	3	4	1	LS 2

Metals:							
1. Aluminum	340	340	340	340	340		6.8
2. Antimony	350	350	350	350	350		7.0
3. Arsenic	8.00	8.00	8.00	8.00	8.00		1.60
4. Barium	310	310	310	310	310		6.2
5. Beryllium	1.00	1.00	1.00	1.00	1.00		0.20
6. Cadmium	2.80	2.80	2.80	2.80	2.80		0.60
7. Calcium	7490	7490	7490	7490	7490		150
8. Chromium	4.50	4.50	4.50	4.50	4.50		0.90
9. Cobalt	8.40	8.40	8.40	8.40	8.40		1.70
10. Copper	120	120	120	120	120		2.40
11. Iron	220	220	220	220	220		4.40
12. Lead	100	100	100	100	100		2.00
13. Magnesium	7410	7410	7410	7410	7410		1480
14. Manganese	4.00	4.00	4.00	4.00	4.00		0.80
15. Mercury	0.10	0.10					0.050
16. Nickel	180 ^{active}	180	180	180	180		3.60
17. Potassium	4590	4590					920
18. Selenium	3.10	[3.6]	3.10	[3.2]	[3.4]		0.60
19. Silver	1.00	1.00	1.00	1.00			0.20
20. Sodium	14200	14200	14200	14200	14200		2840
21. Thallium	3.00	3.00	3.00				0.60
22. Vanadium	170	170	170	170	170		3.40
23. Zinc	9.90	9.90	9.90	9.90	9.90		2.00

Others:							

Cyanide	100	100					0.50

Reporting Units: aqueous, ug/L; solid mg/kg

U. C. Report No. 1

BLANKS

LAB NAME: PBS&JCASE NO. 9411DATE 5/19/88UNITS ug/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value				Preparation Blank	
		Blank Value				Matrix:	Matrix:
		1	2	3	4	1	2
Metals:							
1. Aluminum		340					
2. Antimony		350					
3. Arsenic		8.00					
4. Barium		3.10					
5. Beryllium		1.00	1.00				
6. Cadmium		2.80	2.80				
7. Calcium		7490					
8. Chromium		4.50	4.50				
9. Cobalt		8.40					
10. Copper		120					
11. Iron		2.20					
12. Lead		100					
13. Magnesium		7410	7410				
14. Manganese		4.00	4.00				
15. Mercury							
16. Nickel		180	180				
17. Potassium							
18. Selenium		3.10	[4.17]	3.10			
19. Silver							
20. Sodium		14200	14200	14200	14200		
21. Thallium							
22. Vanadium		170					
23. Zinc		9.90	9.90				
Other:							
Cyanide							

Reporting Units: aqueous, ug/L; solid ug/kg

Q. C. Report No. 1

SPIKE SAMPLE RECOVERY

LAB NAME PBS&JCASE NO. 9411DATE 5/19/88EPA Sample No. mex 163Lab Sample ID No. 8804124-02Units mg/kgMatrix LS

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR ¹
Metals:					
1. Aluminum	75-125		NR		
2. Antimony	"	134	116	150	89
3. Arsenic	"	17	3.7	12	111
4. Barium	"	602	18	602	97
5. Beryllium	"	15	0.30	15	100
6. Cadmium	"	16	[1.0]	15	100
7. Calcium	"		NR		
8. Chromium	"	61	4.0	60	95
9. Cobalt	"	154	2.50	150	103
10. Copper	"	87	19	75	91
11. Iron	"		NR		
12. Lead	"	179	36	150	95
13. Magnesium	"		NR		
14. Manganese	"	281	120	150	107
15. Mercury	"				
16. Nickel	"	157	5.40	150	105
17. Potassium	"		NR		
18. Selenium	"	2.9	1.50	3.0	97
19. Silver	"	2.6	3.00	3.0	87
20. Sodium	"		NR		
21. Thallium	"	12	3.00	15	80
22. Vanadium	"	152	5.10	150	101
23. Zinc	"	196	79	150	78
Other:					
Cyanide					

$$^1 \text{ ZR} = [(SSR - SR)/SA] \times 100$$

"N" - out of control

"NR" - Not required

Comments: _____

Q. C. Report No. 1

SPIKE SAMPLE RECOVERY

LAB NAME PBS&JCASE NO. 9411DATE 5/19/88EPA Sample No. MEX 166Lab Sample ID No. 8804124-05Units mg/kgMatrix LS

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R ¹
Metals:					
1. Aluminum	75-125		NR		
2. Antimony	"				
3. Arsenic	"				
4. Barium	"				
5. Beryllium	"				
6. Cadmium	"				
7. Calcium	"		NR		
8. Chromium	"				
9. Cobalt	"				
10. Copper	"				
11. Iron	"		NR		
12. Lead	"				
13. Magnesium	"		NR		
14. Manganese	"				
15. Mercury	"	0.8	0.1	0.6	117
16. Nickel	"				
17. Potassium	"		NR		
18. Selenium	"				
19. Silver	"				
20. Sodium	"		NR		
21. Thallium	"				
22. Vanadium	"				
23. Zinc	"				
Other:					
Cyanide	"	5.1	0.60	6.2	82

¹ %R = [(SSR - SR)/SA] x 100

"NR" - out of control

"NR" - Not required

Comments: _____

LAB NAME PBS&JCASE NO. 9411DATE 5/19/88EPA Sample No. MEX 166Lab Sample ID No. 8804124-0Units mg/kgMatrix LS

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD ²
Metals:				
1. Aluminum	$\pm 20\%$	3560	3790	6.3
2. Antimony	± 7.0	7.0u	7.0u	NC
3. Arsenic	± 2.0	7.3	7.6	4.0
4. Barium	± 40	77	83	513/1100 47.5
5. Beryllium	± 1.0	0.20	0.20	NC
6. Cadmium	± 1.0	1.8	1.8	0.0
7. Calcium	$\pm 20\%$	8900	10100	13
8. Chromium	$\pm 20\%$	11*	14	24*
9. Cobalt	± 10	[3.5]	[2.6] 513/1100 3.4u	NC
10. Copper	$\pm 20\%$	29	34	16
11. Iron	$\pm 20\%$	8400	8960	6.5
12. Lead	$\pm 20\%$	66	83	23 *
13. Magnesium	± 1000	1050	1130	7.3
14. Manganese	$\pm 20\%$	290	293	1.0
15. Mercury				
16. Nickel	± 8.0	9.6	11	14
17. Potassium	± 1000	[362]	[362]	NC
18. Selenium	± 1.0	1.55	2.45	46
19. Silver	± 10	10u	10u	NC
20. Sodium	± 1000	284u	284u	NC
21. Thallium		2.0u	2.0u	NC
22. Vanadium	± 10	10	10	0.0
23. Zinc	$\pm 20\%$	82*	101	21*
Other:				
Cyanide				

* Out of Control

Ap sample, dup diluted by a factor of 5.

¹ To be added at a later date.² RPD = $|S - D| / ((S + D) / 2) \times 100$

NC - Non calculable RPD due to value(s) less than CRDL

Form VI b

Q. C. Report No. 1

DUPLICATES

LAB NAME PBS&JCASE NO. 9411EPA Sample No. MEK 162DATE 5/19/88Lab Sample ID No. 8804124-0Units mg/kgMatrix LS

Compound	Control Limit ¹	Sample(S)	Duplicate(D)	RPD ²
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium				
5. Beryllium				
6. Cadmium				
7. Calcium				
8. Chromium				
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury	± 0.1	0.12	0.12	0.0
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		2.00 ^{5/18/88} _{MS}		
20. Sodium				
21. Thallium				
22. Vanadium				
23. Zinc				
Other:				
Cyanide	± 0.5 ^{4/25/88} _{MS}	0.50	0.50	NC

* Out of Control

¹ To be added at a later date.² $RPD = \frac{|S - D|}{((S + D)/2)} \times 100$

NC - Non calculable RPD due to value(s) less than CRDL

Q.C. Report No. 1

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME POSSADCASE NO. 9411DATE 5/19/88LCS NO. 9411 ISI, WF

Compound	Required Detection Limits (CAL)-ug/l	Instrument Detection Limits (IDL)-ug/l		Lab Control Sample		
		ICP/AA	Furnace	ug/l		IR
				(circle one)		
				True	Found	
		107 5000A	107 DE3030F			
		TL203P				
Metals:						
1. Aluminum	200	34P		1980	1880	95
2. Antimony	60	35P		1010	1040	103
3. Arsenic	10		8.0F	47	42	89
4. Barium	200	31P		1980	1960	99
5. Beryllium	5	1.0P		481	498	104
6. Cadmium	5	2.8P		489	498	102
7. Calcium	5000	749P		49800	49300	99
8. Chromium	10	4.5P		506	499	99
9. Cobalt	50	8.4P		474	506	107
10. Copper	25	12P		542	510	94
11. Iron	100	22P		1990	2000	101
12. Lead	5	10P		4510	4370	97
13. Magnesium	5000	741P		25000	24500	98
14. Manganese	15	4.0P		513	512	100
15. Mercury	0.2					
16. Nickel	40	18P		496	486	98
17. Potassium	5000	459A		50200	47100	94
18. Selenium	5		3.1F	104	1045+	100
19. Silver	15					
20. Strontium	200	1420P		50700	43700	86
21. Thallium	10					
22. Vanadium	50	17P		511	507	99
23. Zinc	20	9.9P		3100	2890 2829 shaded red	93
Other:						
Cyanide	10	NR	NR	50	48	96

NR = Not required

Q.C. Report No. 1

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME PB53JCASE NO. 9411DATE 5/19/88LCS NO. 9411 1SE

Compound	Required Detection	Instrument Detection		Lab Control Sample		
	Limit (CDL)-ug/l	Limit (IDL)-ug/l		ug/l	ug/l	ug/l
		ICP/AI	Furnace			
		10/11252A	10/EE50007			
				True	Found	AR
Metals						
1. Aluminum	200					
2. Antimony	50					
3. Arsenic	10					
4. Barium	200					
5. Beryllium	5					
6. Cadmium	5					
7. Calcium	5000					
8. Chromium	10					
9. Cobalt	50					
10. Copper	25					
11. Iron	100					
12. Lead	5					
13. Magnesium	5000					
14. Manganese	15					
15. Mercury	0.2	0.1CV		AR	AR	AR
16. Nickel	40					
17. Potassium	5000					
18. Selenium						
19. Silver	10		1.0F	97.6	96.2	99
20. Sodium	5000					
21. Thallium	10		3.0F	97.3	92	95
22. Vanadium	10					
23. Zinc	10					
Other						
Cyanide	10	NR	1X			

NR - Not required



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
IND 980904379

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) Beck's Lake Site	02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER Colfax and Kaley Streets				
03 CITY South Bend	04 STATE IN	05 ZIP CODE 46619	06 COUNTY St. Joseph	07 COUNTY CODE 141	08 CONG DIST 003
09 COORDINATES LATITUDE 41° 40' 05" N		LONGITUDE 86° 17' 30" W		South Bend West Quad	

10 DIRECTIONS TO SITE (Starting from nearest public road)

Take US 31 north to South Bend. Exit West on Western Road. Take a right 2 miles down on Dundee Street. Go 2 blocks to Washington St. Park is in front of you along the next 7 blocks.

III. RESPONSIBLE PARTIES

01 OWNER (Business, residential) City of South Bend/Dept of Public Works	02 STREET (Business, residential) 301 South St. Louis			
03 CITY South Bend	04 STATE IN	05 ZIP CODE 46617	06 TELEPHONE NUMBER ()	Mr. Seitz
07 OPERATOR (Business, residential) same	08 STREET (Business, residential)			
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER ()	
13 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A PRIVATE <input type="checkbox"/> B FEDERAL <input type="checkbox"/> C STATE <input type="checkbox"/> D COUNTY <input checked="" type="checkbox"/> E MUNICIPAL <input type="checkbox"/> F OTHER <input type="checkbox"/> G UNKNOWN				
14 OWNER/OPERATOR NOTIFICATION ON FILE (Check appropriate) <input type="checkbox"/> A RCRA 3001 DATE RECEIVED MONTH DAY YEAR <input checked="" type="checkbox"/> B UNCONTROLLED WASTE SITE CERCLA 102 DATE RECEIVED 3 28 84 <input type="checkbox"/> C NONE				

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION <input type="checkbox"/> YES DATE MONTH DAY YEAR <input checked="" type="checkbox"/> NO	BY (Check appropriate) <input type="checkbox"/> A EPA <input type="checkbox"/> B EPA CONTRACTOR <input type="checkbox"/> C STATE <input type="checkbox"/> D OTHER CONTRACTOR <input type="checkbox"/> E LOCAL HEALTH OFFICIAL <input type="checkbox"/> F OTHER CONTRACTOR NAME(S):			
02 SITE STATUS (Check one) <input type="checkbox"/> A ACTIVE <input checked="" type="checkbox"/> B INACTIVE <input type="checkbox"/> C UNKNOWN	03 YEARS OF OPERATION unknown 1960s <input checked="" type="checkbox"/> UNKNOWN BEGINNING YEAR ENDING YEAR			
04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN OR ALLEGED organics (toxic, persistent) acids (corrosive, reactive) inorganics (toxic, persistent) bases (corrosive, reactive) solvents (toxic, flammable, ignitable) heavy metals (persistent, toxic) asbestos (toxic)				
05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION surface waters (population/environment) groundwaters (population/environment) direct contact (population/environment)				

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☒ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☐ C. LOW (Inspection on time available basis) ☐ D. NONE (No further action needed; complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT Harry Atkinson	02 OF (Agency, Organization) Indiana State Board of Health	03 TELEPHONE NUMBER (317) 243-5132		
04 PERSON RESPONSIBLE FOR ASSESSMENT Susanne Buthman	05 AGENCY ISBH	06 ORGANIZATION LPC	07 TELEPHONE NUMBER (317) 243-5034	08 DATE 5 31 85 MONTH DAY YEAR



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
IND 980904379

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply) <input checked="" type="checkbox"/> A SOLID <input checked="" type="checkbox"/> B POWDER FINES <input checked="" type="checkbox"/> C SLUDGE <input type="checkbox"/> D OTHER _____ <input checked="" type="checkbox"/> E SLURRY <input checked="" type="checkbox"/> F LIQUID <input type="checkbox"/> G GAS	02 WASTE QUANTITY AT SITE Measures of waste quantities must be independent TONS unknown CUBIC YARDS unknown NO. OF DRUMS unknown	03 WASTE CHARACTERISTICS (Check all that apply) <input checked="" type="checkbox"/> A TOXIC <input checked="" type="checkbox"/> B CORROSIVE <input type="checkbox"/> C RADIOACTIVE <input checked="" type="checkbox"/> D PERSISTENT <input checked="" type="checkbox"/> E SOLUBLE <input type="checkbox"/> F INFECTIOUS <input checked="" type="checkbox"/> G FLAMMABLE <input checked="" type="checkbox"/> H IGNITABLE <input checked="" type="checkbox"/> I HIGHLY VOLATILE <input type="checkbox"/> J EXPLOSIVE <input checked="" type="checkbox"/> K REACTIVE <input type="checkbox"/> L INCOMPATIBLE <input type="checkbox"/> M NOT APPLICABLE
--	--	--

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	unknown	unknown	waste streams from Bendix show
OLW	OILY WASTE	unknown	unknown	many chemicals, especially heavy
SOL	SOLVENTS	unknown	unknown	metals, in the wastes disposed
PSD	PESTICIDES			of (see attached sheet).
OCC	OTHER ORGANIC CHEMICALS	unknown	unknown	Amounts are unknown as is the
IOC	INORGANIC CHEMICALS	unknown	unknown	physical state of wastes at the
ACD	ACIDS	unknown	unknown	time of disposal. Major
BAS	BASES	unknown	unknown	components are listed below.
MES	HEAVY METALS	unknown	unknown	

IV. HAZARDOUS SUBSTANCES

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/ DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
MES	Chromium (+6)	7440-47-3			
MES	Cadmium	7440-43-9			
IOC	Asbestos	1332-21-4			
ACD	Sulfuric acid	7664-93-9			
OCC	Napthalene	91-20-3			
SOL	Methyl Isobutyl Ketone	108-10-1			
SOL	Ethanol	999			
SOL	4,4-Methylene bis (2-Chloroanilene)	101-14-4			
MES	Lead	7439-92-1			
MES	Selenium	7782-49-2			
MES	Zinc	7440-66-6			
IOC	Barium Chloride	10361-37-2			
MES	Nickel	7440-20-0			
OCC	Phenols	999			
MES	Barium	999			
MES	Arsenic	7440-35-2			

V. FEEDSTOCKS

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION

Indiana State Board of Health files--Bendix Corp, RCRA, ERRIS
Paul Trost-St. Joseph County Health Officer



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE IND 02 SITE NUMBER 980904379

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A GROUNDWATER CONTAMINATION 02 OBSERVED (DATE) ☒ POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Site area served by city water and private wells. Shallow aquifer in area. Water at 3-40 feet below surface.

3 city wellfields with 3-mile radius.

01 ☒ B SURFACE WATER CONTAMINATION 02 OBSERVED (DATE) ☒ POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Beck's Lake is on the property. No sampling of lake in files. Potential for migration of chemicals into lake via surface runoff and barrels leaking through the shallow layer of soils.

01 ☒ C CONTAMINATION OF AIR 02 OBSERVED (DATE) ☒ POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Potential for buried asbestos to surface and become airborne.

01 ☐ D FIRE EXPLOSIVE CONDITIONS 02 OBSERVED (DATE) ☐ POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED 04 NARRATIVE DESCRIPTION

unknown

01 ☒ E DIRECT CONTACT 02 OBSERVED (DATE) ☒ POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Large potential for park visitors to contact chemicals while in park or lake if waste streams were put here. Heavy metal wastes would still be present in the soils.

01 ☒ F CONTAMINATION OF SOIL 02 OBSERVED (DATE) ☒ POTENTIAL ALLEGED
03 AREA POTENTIALLY AFFECTED 13 04 NARRATIVE DESCRIPTION

See E above. If liquids were dumped unbarrelled, massive soil contamination would result. If barrelled and buried, barrels could leak. Asbestos fibers may be buried here also.

01 ☒ G DRINKING WATER CONTAMINATION 02 OBSERVED (DATE) ☒ POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Definite potential for drinking water contamination due to private wells around site and 3 city wellfields in 3 mile radius.

01 ☒ H WORKER EXPOSURE INJURY 02 OBSERVED (DATE) ☒ POTENTIAL ALLEGED
03 WORKERS POTENTIALLY AFFECTED unknown 04 NARRATIVE DESCRIPTION

Yes, if asbestos or heavy metals were placed on-site during the disposal years.

01 ☒ I POPULATION EXPOSURE INJURY 02 OBSERVED (DATE) ☒ POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Site is a city park now and is located southwest of the heart of South Bend. Residential area surrounds the site so population could be directly affected by materials.



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
IND 980904379

II. HAZARDOUS CONDITIONS AND INCIDENTS *Continued*

01 ☒ J. DAMAGE TO FLORA 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Heavy metals affect plant growth and can lead to large areas of denuded soils; increasing erosion and runoff.

01 ☒ K. DAMAGE TO FAUNA 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION *include name(s) of species*

Yes, if fish in the lake are eating contaminated benthic organisms or organic wastes in lake waters.

01 ☒ L. CONTAMINATION OF FOOD CHAIN 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Bioaccumulation could occur via plants and fish, up through the food chain to man.

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
(Some functions may require evaluation)

03 POPULATION POTENTIALLY AFFECTED >10,000 04 NARRATIVE DESCRIPTION

Yes, if liquids were dumped unbarrelled or if buried barrels and asbestos are migrating to the surface.

01 ☒ N. DAMAGE TO OFFSITE PROPERTY 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Yes, if migration of chemicals was in process. Migration time will depend on wastes and their burial state.

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Yes, area is on city sewer system.

01 ☒ P. ILLEGAL UNAUTHORIZED DUMPING 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Very likely due to the nature of the site. It was an open dump, unfenced when it began.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

Unknown

III. TOTAL POPULATION POTENTIALLY AFFECTED: 210,000

IV. COMMENTS

City of South Bend may have soil borings or old files for this site (Parks Dept., Building and Construction, etc). Very little information available on site.

V. SOURCES OF INFORMATION *Cite specific references, e.g., state files, sample analysis reports.*

Indiana State Board of Health files: Bendix RCRA; ERRIS, CERCLA
Paul Trost--St. Joseph County Health Officer